Universidad de Navarra

Máster en Investigación Biomédica
Facultad de Ciencias

Research Project Proposal
Academic year 2016-2017

Project Nº 51

Title: Hemispheric dominance of Parkinson's disease and cognitive function.

Department/ Laboratory *Laboratory of Neuroimage School of Medicine*

Director 1 Dra. Maria A. Pastor

Contact: *mapastor@unav.es*

Codirector: Dra. *Maria A. Fernandez Seara*

Contact: mfseara@unav.es

Summary

Unilateral onset and persisting asymmetry of the cardinal motor features: tremor rigidity and akynesia are diagnostic hallmarks of Parkinson's disease. The mechanisms underlying asymmetric motor symptoms in Parkinson's disease are unknown. Several recent studies have found that in right-handed patients with Parkinson's disease, a greater proportion of subjects had more severe motor impairments on the right compared with the left side raising the issue that handedness and hemispheric dominance might somehow be involved (Uitti et al., 2005; Haaxma et al., 2010; Barrett et al., 2011).

We are interested in studying a cohort of patients with Parkinson's disease using both structural and functional MRI techniques to define differences between left onset and right onset disease and its relation with handedness. The study will involve the application of voxel based morphometry (selective segmentation of grey and white matter), perfusion during rest analyses (using Arterial Spin Labeling sequences), and effective connectivity at rest. In addition we will perform effective connectivity analyses in selected areas responsible of cognitive functions such as working memory and visuospatial processing to understand the deficits related with hemispheric dominance of the disease.

References

Uitti RJ, Baba Y, Whaley NR, Wszolek ZK, Putzke JD. Parkinson disease handedness predicts asymmetry. Neurology 2005; 64: 1925–30.

Haaxma CA, Helmich RC, Borm GF, Kappelle AC, Horstink MW, Bloem BR. Side of symptom onset affects motor dysfunction in Parkinson's disease. Neuroscience 2010;

170: 1282–5.
Barrett MJ, Wylie SA, Harrison MB, Wooten GF. Handedness and motor symptom asymmetry in Parkinson's disease. J Neurol Neurosurg Psychiatry 2011; 82: 1122–4.

POSSIBILITY OF PhD

YES*

* (PhD grant required)